

## ABSTRACT

A long wavelength vertical cavity surface emitting laser having a substrate, a first mirror situated on the substrate, an active region situated on the first mirror, a second mirror  
5 situated on the active region. The first mirror may have several pairs of layers with an oxidized layer in one or more pairs of that mirror. The substrate may include InP and the mirror components may be compatible with the InP. The one or more layers in the first mirror may be oxidized via a trench-  
10 like approach or other arrangement.